CIS 101 – Beginning Programming
Course Syllabus and Calendar – Fall 2012

Professor Don Colton

Brigham Young University–Hawai'i

Contents

1 Overview

Computers are great. But they are also really stupid.

By stupid, I mean computers only understand really simple commands. Anything complex must be built up out of these simple commands.

Programming is the art of building up the fun and interesting things that you want to be done, starting from just the really simple commands that the computer can understand.

Sometimes it is frustrating. Sometimes it is exhilarating.

This class teaches powerful knowledge. It teaches skills by which you can better serve those around you. It teaches skills you can "take to the bank."

For many it is a really fun class. Others hate it. This

class can be hard work.

It is a foundational step in developing your ability to serve those around you by giving them better ways to use their computers.

And it can be the gateway to automating some of the (mind-numbing) tasks that can be involved with things like computer systems administration.

We build web-based programs that you can share through the Internet with anyone in the world: friends, family, anybody. And we develop skills you can use in later classes and the work place.

The textbook is online free. You can download the PDF from http://ipup.doncolton.com/

We will use the Third Edition. I often make small improvements, like spelling corrections, throughout the semester. Rarely I make bigger changes, like whole new sections or chapters. So printing it out is not really recommended. Why kill a tree? Reading a fresh copy on your computer would be ideal, if that works for you.

I try hard to not lecture much in class. (Sometimes I end up lecturing anyway.) The book contains my lectures. You read them outside of class. In class we may review parts of the reading and I always give you a chance to ask questions.

Most time in class is spent actually making things. I go over parts of the textbook to introduce activities, but there is lots more in the book that you are expected to read on your own.

Based on past experience, everyone who regularly attends will pass the class. (The F grades usually only happen to people who quit coming to class.) To get an A you normally must do a project of your own design.

http://byuh.doncolton.com/cis101/2125/sguide.pdf has official project details.

Here is the actual grade distribution from Summer B 2012: (17 students) A A A A A A A A A B B- C D- F F F F.

Here is the actual grade distribution from Summer A 2012: (12 students) A A A A- B B C C- D+ D D- D-.

Here is the actual grade distribution from Winter 2012: (39 students) A A A A A A A A- A- A- A- A- B+ B+ B+ B+ B+ B B B B B B B B- B- B- C+ C+ C+ C+ C C C- C- D D F F F.

1.1 So, What is Programming?

First the bad news. Computers are pretty stupid. You have to give them simple steps to follow.

Now the good news. Computers are fast, reliable, and cheap. They don't get offended, call in sick, or take vacation.

Many interesting tasks can be built up out of the simple steps that computers can perform. For these reasons, even though they are pretty stupid, computers are very popular.

The art of programming is the art of converting useful activities into simple steps that a computer can perform.

Our programming language will be Perl.

1.2 Preparation

We assume you have no programming experience whatever. We expect you can read, type, send and receive email, and visit web sites. We will teach you everything else you need to know.

1.3 There May Be Changes

Like all courses I teach, I will be looking for ways this one could be improved. Changes generally take the form of opportunities for extra credit, so nobody gets hurt and some people may be helped. If I make a change to the course and it seems unfair to you, let me know and I will try to correct it. If you are brave enough, you are welcome to suggest ways the class could be improved.

2 Course Details

2.1 About the Course

- **Course Number:** CIS 101
- **Title:** Beginning Programming
- **Course Description:** Extensive hands-on software develoment and testing using variables, arrays, instruction sequences, decisions, loops, and subroutines. May also include dynamic web pages (CGI) and regular expressions.
- **Textbook:** Introduction to Programming Using Perl and CGI, by Don Colton.

- **Classroom:** GCB 111
- **Start/End:** Sep 10 to Dec 14, 2012
- **Class Time:** MWF 9:50 AM to 10:50
- **Final Exam:** Fri, Dec 14, 10:00–12:50

2.2 Important Website Links

- **Don Colton Home Page (General):** http://doncolton.com/
- **Prof Colton Home Page (BYUH):** http://byuh.doncolton.com/
- **CIS 101 Course Home Page:** http://byuh.doncolton.com/cis101/
- **CIS 101 Textbook:** PDF http://ipup.doncolton.com/
- **My Learning Management System: (Grade Book, Exams, etc.)** https://dcquiz.byuh.edu/

2.3 About the Instructor

- **Instructor (me):** Don Colton
- **My email:** doncolton2@gmail.com
- **My Office:** GCB 128
- **Office Hour:** MWF 10:50–11:20 AM
- **Office Hour:** MWF 1:10–1:40 PM

I may digitally record the audio of my lectures some days. This helps me improve my teaching materials.

3 Learning Objectives

The following is a statement of the high-level learning objectives for this course. Each objective can be further divided into many smaller objectives.

By the conclusion of this course, students will demonstrate the ability to write clear and correct programs that utilize the following techniques.

* sequences of simple steps

* simple variables

* decisions (if, else, elsif)

* looping (while, for, foreach)

* array and list variables

* subroutines

* dynamic web page creation

* dynamic response to web page inputs

Students will demonstrate most of these skills by creating short programs that perform specific tasks in timed and supervised situations.

4 Grading

Grading is based on learning objectives and learning activities. As you demonstrate adequate skill with each objective, the points are awarded toward your semester grade. I track your progress online so you can always tell which points you have received.

4.1 Grading Scale

Grading is on a standard 60/70/80/90 model using 1000 points, plus a number of bonus points.

Grading is based on 1000 points

930+	A	900–929	A–	870–899	B+
830–869	B	800–829	B–	770–799	C+
730–769	C	700–729	C–	670–699	D+
630–669	D	600–629	D–	0–599	F

You need to earn a C or better (730 points or more) in the class if you plan to major in CS, IS, or IT. If you earn less, you must retake the class or change majors.

You earn points for effort (500) and skill (500), with some extra credit possible.

4.2 Tracking Your Grade

https://dcquiz.byuh.edu/ is my personal Learning Management System. There I maintain an online grade book. You can see how your points are adding up. You can compare your points with other students in the class (without seeing any names).

Your points are divided into two grade books: Effort and Overall. The Effort points track things like the daily updates, study time, and in-class activities. The Overall imports a total from Effort, and adds your exam performance.

4.3 Effort: (56+18) Daily Update

Each day in class starts with the daily update. It is my way of taking roll, and your way of saying something to the other students and to me. It must be taken during the 15-minute window of time that starts 10 minutes before class and ends 5 minutes into class.

This is worth two points per class period, with 56 points expected (for 28 class periods) and 74 points maximum (for all 37 class periods this semester). It is partly a reward for coming on time, or close enough that you can do the update.

As part of the Daily Update, each day I will ask you how much time you spent studying. I will use your report to update your study points.

4.4 Effort: (324+54) Study Points

By (324+54) we mean there are 324 points of regular credit and 54 points of extra credit in this category.

We award three points per hour of "study," by which we mean you are engaging with the materials of this course. We expect you to put in about 100 hours of study on this course, with about 40 of those hours being right in class and about 60 of those hours being outside of class.

During Fall, that works out to 3 hours of study in class and 5 to 6 hours of study outside of class in a typical week.

Using 8 hours per week for 13.5 weeks, that works out to 324 points in this category, or very close to 1/3 of your total points. You may earn up to 54 additional points (extra credit) in this category during the semester for a maximum of 378 points.

(324) max 378, Time Spent Studying

- 24 max 27, in the week before class on Sep 17
- 24 max 27, in the week before class on Sep 24
- 24 max 27, in the week before class on Oct 1
- 24 max 27, in the week before class on Oct 8
- 24 max 27, in the week before class on Oct 15
- 24 max 27, in the week before class on Oct 22
- 24 max 27, in the week before class on Oct 29
- 24 max 27, in the week before class on Nov 5
- 24 max 27, in the week before class on Nov 12
- 24 max 27, in the week before class on Nov 19
- 24 max 27, in the week before class on Nov 26
- 24 max 27, in the week before class on Dec 3
- 24 max 27, in the week before class on Dec 10
- 12 max 27, in the week of the Final on Dec 14

Reporting Your Study Time

If you do not report in some other way, like by way of the daily update, you can report by sending an email to me.

Normally each Wednesday you should report having studied about three hours in the previous two days. Each Friday you should report having studied about six hours in the previous four days. Each Monday you should report having studied about nine hours in the previous seven days.

I will take the hours you report. I will multiply that by 3.

To get the study points, you must keep a written, contemporaneous (up to date), daily record of the time you studied for this course.

You must earn the points in the week for which they are awarded.

Study time is measured from the start of the first class each week.

Carry-overs are not allowed unless I give you special permission. This can happen if you have a special circumstance like illness or university-approved travel.

We only count time you gave your mostly undivided attention to this course. (Minor interruptions are okay. Big ones stop the clock.)

1. You can count time you attended class (and paid attention; sleeping does not count).

2. You can count time you read/studied (any part of) the readings I provide, including this syllabus, the textbook, and the study guide. This includes following the links in the study guide, which typically lead to Wikipedia pages, and reading what you find there.

3. You can count time you practiced writing programs in Perl, either for this class or for any other purpose, whether they were specifically assigned or not.

4. You can count time you spent for this class reviewing old exams.

5. You can count time you studied for this class with other students.

6. You can count time you worked for this class with

tutors.

If you think of another category that you think should count, ask me.

4.5 Effort: (120+?) Activities

(120) In-Class Activity Points (one per day)
- 5 Online Static: create an html web page
- 5 Online Pictures: use img tags
- 5 Online CGI: write a dynamic web page
- 5 etc etc

The number of in-class activities is not perfectly predictable. The points for each will be adjusted so the full-credit values add up to 120.

Points are assigned on a 0-1-2-3 basis as follows:

0: 0% credit, nothing found, or way too little.

1: 50% credit, a reasonable attempt but incomplete.

2: 100% credit.

3: 150% credit, unusually impressive or creative.

4.6 Effort Summary (500+72)

- Effort:
  - Daily Update: 56+18
  - Study Points: 324+54
  - Activities: 120+?
- Total: 500+72+?

If you have earned enough points (on assignments, tests, etc.) that full credit on all future Effort items would get your overall grade up to an A, and you bring it to my attention, then I will grant those remaining effort points and you will have your A.

4.7 Skill: (420+0) Exams

Each of the 21 exam tasks is a program that you can do during one of the final exams. Each is worth 20 points, and can be earned only once.

There are six exams given during the semester. Each one is a "final exam" in the sense that it covers everything we learn during the semester, and by completing it, you earn the points for it as though you had done it on the day of the actual final. Except for the last exam, they are called "early final" exams. Each early final lasts for about one hour. The last final lasts for about three hours. One practice exam is also given, for no credit, to help you understand how to do the other tests.

(420) Exam Points (21 tasks)
- 1 String Basic (1B)
- 2 Number Basic (2B)
- 3 Number Story (2S)
- 4 Number Decision (4D)
- 5 Number Decision Story (4S)
- 6 String Decision (5D)
- 7 String Decision Bracket (5B)
- 8 Repeat While (6W)
- 9 Repeat For (6F)
- 10 Repeat Last (6L)
- 11 Repeat Nested Loops (6N)
- 12 Lists Basic (7B)
- 13 Lists Loop (7L)
- 14 Arrays Basic (8B)
- 15 Arrays Loop (8L)
- 16 Split (8S)
- 17 Join (8J)
- 18 Subroutine Returns (9R)
- 19 Subroutine Positional Parameters (9P)
- 20 Subroutine Globals and Locals (9G)
- 21 Subroutine Variable Parameters (9V)

4.8 Skill: (80+0) Project

(80) Project Points
- 20 Project CGI: write a dynamic web page
- 20 Project Pictures: use img tags
- 20 Project Multi Input: process multiple inputs
- 20 Project Hidden Fields: pass state

Project points are earned for performance on out-of-class work. You must have 800 in-class (effort plus exam) points or 340 exam points before the project will count. The project must be your own work. It should be fun. A game would be ideal. You are allowed to consult with others including websites but you are not allowed to cut and paste code written by others. Each online screen must clearly identify you as the author. It must accept user input. It should utilize hidden fields (state) that are needed for its operation.

Your final project cannot just be something we did in class. The in-class activities are good examples, and teach good principles, but they do not demonstrate understanding or creativity. If your project is based on something we did in class, it must go beyond it in some substantial and significant way.

http://dc.is2.byuh.edu/cis101.2125/ is the place to link your project. It is the Student Projects page for this class. Link it to the "proj" slot.

http://byuh.doncolton.com/cis101/2125/sguide.pdf has a more detailed presentation of the official project details.

4.9 Pure Extra Credit: (0+??)

Report an error in the materials I provide. I always provide a syllabus and a course website. I may provide other materials, such as a textbook, a study guide, and sample tests. Each error reported can earn you extra credit.

4.10 Totals: (1000+72)

By doing everything listed, except the error reports, you will earn 1000 points of regular credit and 72 points of extra credit.

5 Calender

Here is what you can learn from the calendar: (a) when the exams are happening, and (b) what to study.

The exams are fixed in time. They will not change unless there is a fire or a flood or something. Exams happen on some Fridays. They are closed-book, closed-notes, closed-neighbor, etc. You can bring blank paper. **Some memorization is required.**

The other things will be adjusted as we go through the semester. I reflect my plans in the Daily Update calendar section. The "next few days" should always be a pretty good guide for what you should study.

5.1 Day by Day

Mon Sep	10	37	grading, studying, is2 web page
Wed Sep	12	36	review syllabus and book
Fri Sep	14	35	Unit 1: Output, 101.11.hello
Mon Sep	17	34	Unit 2: Input, 101.12.hi.Fred
Wed Sep	19	33	Unit 2: Input, Mad Lib (desktop)
Fri Sep	21	32	**exam 0** practice test
Mon Sep	24	31	Ch 10: olin, Mad Lib (online)
Wed Sep	26	30	pictures: dice (desktop, online)
Fri Sep	28	29	**exam 1**
Mon Oct	1	28	Unit 3: 101.13.before.after
Wed Oct	3	27	101.14.twice or 101.15.bankBal
Fri Oct	5	26	101.16.celsius or 101.17.age
Mon Oct	8	25	Unit 4:
Wed Oct	10	24	Unit 5:
Fri Oct	12	23	**exam 2**
Mon Oct	15	22	Talk about Loops
Wed Oct	17	21	Unit 4: Blocks
Fri Oct	19	20	Decisions and Loops
Mon Oct	22	19	Unit 5: Decisions
Wed Oct	24	18	is2: Hi-Low
Fri Oct	26	17	**exam 3**
Mon Oct	29	16	loops, ++, +=
Wed Oct	31		ISECON, No Class
Fri Nov	2		ISECON, No Class
Mon Nov	5	15	is2: farm
Wed Nov	7	14	review decisions and loops
Fri Nov	9	13	push, pop
Mon Nov	12	12	foreach, is2: boring
Wed Nov	14	11	Unit 7: Arrays, split, join
Fri Nov	16	10	**exam 4**
Mon Nov	19	9	indexing
Wed Nov	21	8	localtime
Fri Nov	23		Thanksgiving, No Class
Mon Nov	26	7	Subroutines: parameters
Wed Nov	28	6	Subroutines: globals
Fri Nov	30	5	**exam 5**
Mon Dec	3	4	Subroutines: farm
Wed Dec	5	3	Farm revisited
Fri Dec	7	2	JS calc, Client-side
Mon Dec	10	1	JS ezCalc, projects due
Fri Dec	14	0	Final Exam, 10 to 1: **exam 6**

5.2 Excused Absences

My policy on absences is to build enough slack into the schedule that you can miss a day when ever you need to. Take a friend to the airport? Take your spouse or child to the doctor? Take a field trip for another class? No problem.

Study points can be made up by any form of studying that is allowed. You do not need to be in class to collect those points.

Daily Update points assume that you will be on time to class about 3/4 of the time. If you are on time more often than that, you get extra credit.

If you have to miss an exam, since there are six exams and they have identical content, my advice is to study harder for one of the other exams. If you have to miss the last final, that's a bit more difficult, but

it is still possible to do all the problems within the first five exams.

If you have a situation that does not fit inside these guidelines, come and see me as soon as you know about it. For me it is hugely difficult to set up a test for just one student, or to create a whole new test for one student. I prefer to find another way. If we plan ahead, it reduces the difficulties.

6 Support: Tutoring, etc.

6.1 Tutoring

The CIS department provides tutoring in GCB 111, Monday through Friday, typically starting around 5 PM and ending around 11 PM (but earlier on Fridays). Normally a schedule is posted on one of the doors of GCB 111.

Tutors can be identified by the red vests they wear when they are on duty.

The best way to use a tutor is to show them something that you have written and ask them why it does not work the way you want. This can open the door to a helpful conversation.

Another good way to use a tutor is to show them something in the textbook and ask about it.

The worst way to use a tutor is to plunk down next to them and say, "I don't understand. Can you teach me?" If you did not try hard to read carefully, you are wasting everybody's time.

If you still need help, please come and see me, even outside my posted office hours. My door is always open.

6.2 Study Groups

You are encouraged to form a study group. If you are smart, being in a study group will give you the opportunity to assist others. By assisting others you will be exposed to ideas and approaches (and errors) that you might never have considered on your own. You will benefit.

If you are struggling, being in a study group will give you the opportunity to ask questions from someone that remembers what it is like to be totally new at this subject. They are more likely to understand your questions because they sat through the same classes you did, took the same tests as you did, and probably thought about the same questions that you did.

Most of us are smart some of the time, and struggling some of the time. Study groups are good.

7 BYUH Learning Framework

I believe in the BYUH Framework for Learning. If we follow it, class will be better for everyone.

7.1 Prepare for CIS 101

Prepare: Before class, study the course material and develop a solid understanding of it. Try to construct an understanding of the big picture and how each of the ideas and concepts relate to each other. Where appropriate use study groups to improve your and others' understanding of the material.

In CIS 101: Make reading part of your study. There is more than we could cover in class because we all learn at different rates. Our in-class time is better spent doing activities and answering your questions than listening to me lecture.

7.2 Engage in CIS 101

Engage: When attending class actively participate in discussions and ask questions. Test your ideas out with others and be open to their ideas and insights as well. As you leave class ask yourself, "Was class better because I was there today?"

In CIS 101: Participate in the in-class activities. Those that finish first are often requested to help those that want assistance. It is amazing what you can learn by trying to help someone else.

7.3 Improve at CIS 101

Improve: Reflect on learning experiences and allow them to shape you into a more complete person: be willing to change your position or perspective on a certain subject. Take new risks and seek further opportunities to learn.

In CIS 101: After each exam, with possible rare exceptions, I allow you to see every answer submitted, every score given, and every comment I wrote, for every question. Review your answers and those of other students. See how your answers could be improved. If you feel lost, study the readings again or ask for help.

8 Standard Statements

All syllabi are encouraged or required to address certain topics. These are generally considered to be common sense, but we find that it is useful to mention them explicitly anyway.

8.1 Dress and Grooming Standards

The dress and grooming of both men and women should always be modest, neat and clean, consistent with the dignity adherent to representing The Church of Jesus Christ of Latter-day Saints and any of its institutions of higher learning. Modesty and cleanliness are important values that reflect personal dignity and integrity, through which students, staff, and faculty represent the principles and standards of the Church. Members of the BYUH community commit themselves to observe these standards, which reflect the direction given by the Board of Trustees and the Church publication, "For the Strength of Youth." The Dress and Grooming Standards are as follows:

Men. A clean and neat appearance should be maintained. Shorts must cover the knee. Hair should be clean and neat, avoiding extreme styles or colors, and trimmed above the collar leaving the ear uncovered. Sideburns should not extend below the earlobe. If worn, moustaches should be neatly trimmed and may not extend beyond or below the corners of mouth. Men are expected to be clean shaven and beards are not acceptable. (If you have an exception, notify the instructor.) Earrings and other body piercing are not acceptable. For safety, footwear must be worn in all public places.

Women. A modest, clean and neat appearance should be maintained. Clothing is inappropriate when it is sleeveless, strapless, backless, or revealing, has slits above the knee, or is form fitting. Dresses, skirts, and shorts must cover the knee. Hairstyles should be clean and neat, avoiding extremes in styles and color. Excessive ear piercing and all other body piercing are not appropriate. For safety, footwear must be worn in all public places.

8.2 Accommodating Special Needs

Brigham Young University–Hawai'i is committed to providing a working and learning atmosphere which reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, you are invited to contact the Students With Special Needs Coordinator at 808-675-3518. Reasonable academic accommodations are made for all students who have qualified documented disabilities.

8.3 Plagiarism

http://en.wikipedia.org/wiki/Plagiarism has a wonderful article on plagiarism. Read it if you are not familiar with the term. Essentially, plagiarism is when you present the intellectual work of other people as though it were your own. This may happen by cut-and-paste from a website, or by group work on homework. In some cases, plagiarism may also create a violation of copyright law. If you borrow wording from someone else, identify the source.

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to appropriate disciplinary action administered through the university Honor Code Office, in addition to academic sanctions that may be applied by an instructor.

Inadvertent plagiarism, whereas not in violation of the Honor Code, is nevertheless a form of intellectual carelessness that is unacceptable in the academic community. Plagiarism of any kind is completely contrary to the established practices of higher education, where all members of the university are expected to acknowledge the original intellectual work of others that is included in one's own work.

CIS 101: In this course group work is permitted and encouraged but you are not allowed to turn in work that is beyond your understanding, whether you give proper attribution or not. Make sure you understand what you are submitting and why each line is there.

CIS 101: On exams you are required to work from personal memory, using only the resources that are normally present on your computer. This means the exams are closed book and closed notes. However, you are nearly always allowed (and encouraged!) to test your programs by actually running them on the computer where you are sitting. Students caught cheating on an exam may receive a grade of F for the semester, no matter how many points they may have earned, and they will be reported to the Honor Code office.

Faculty are responsible to establish and communicate to students their expectations of behavior with respect to academic honesty and student conduct in the course. Observations and reports of academic dishonesty shall be investigated by the instructor, who will determine and take appropriate action, and report to the Honor Code Office the final disposition of any incident of academic dishonesty by completing an Academic Dishonesty Student Violation Report. If the incident of academic dishonesty involves the violation of a public law, e.g., breaking and entering into an office or stealing an examination, the act should also be reported to University Police. If an affected student disagrees with the determination or action and is unable to resolve the matter to the mutual satisfaction of the student and the instructor, the student may have the matter reviewed through the university's grievance process.

8.4 Sexual Harassment

BYUH's policy against sexual harassment complies with federal Title IX of the Education Amendments of 1972 to protect university students from student-to-student sexual harassment both in and out of the classroom setting. Any incidents of such student-to-student harassment should be reported to either the Director of Human Resources (808-675-3713) or the Honor Code Office (808-675-3531). Allegations of sexual harassment are taken seriously. Upon receiving a report of sexual harassment, the Director of Human Resources will take appropriate action to resolve and correct conditions resulting from individual perceptions or from inappropriate behavior.